

	A	B	C	D	E	F	G	H	I	J	K	L										
1	<b>General UCL Statistics for Data Sets with Non-Detects</b>																					
2	<b>User Selected Options</b>																					
3	From File Sheet1.wst																					
4	Full Precision OFF																					
5	Confidence Coefficient 95%																					
6	Number of Bootstrap Operations 2000																					
7																						
8																						
9	<b>Result_Value (1,3-dichlorobenzene_ug/kg)</b>																					
10																						
11	<b>General Statistics</b>																					
12	Number of Valid Data 50				Number of Detected Data 0																	
13	Number of Distinct Detected Data 0				Number of Non-Detect Data 50																	
14					Percent Non-Detects 100.00%																	
15																						
16	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!																					
17	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!																					
18	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).																					
19																						
20	The data set for variable Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!																					
21																						
22																						
23																						
24	<b>Result_Value (hexachlorobenzene_ug/kg)</b>																					
25																						
26	<b>General Statistics</b>																					
27	Number of Valid Data 50				Number of Detected Data 28																	
28	Number of Distinct Detected Data 27				Number of Non-Detect Data 22																	
29					Percent Non-Detects 44.00%																	
30																						
31	<b>Raw Statistics</b>						<b>Log-transformed Statistics</b>															
32	Minimum Detected 200				Minimum Detected 5.298																	
33	Maximum Detected 2360				Maximum Detected 7.766																	
34	Mean of Detected 680				Mean of Detected 6.28																	
35	SD of Detected 576.9				SD of Detected 0.66																	
36	Minimum Non-Detect 351				Minimum Non-Detect 5.861																	
37	Maximum Non-Detect 765				Maximum Non-Detect 6.64																	
38																						
39	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect 43															
40	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected 7															
41	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage 86.00%															
42																						
43	<b>UCL Statistics</b>																					
44	<b>Normal Distribution Test with Detected Values Only</b>						<b>Lognormal Distribution Test with Detected Values Only</b>															
45	Shapiro Wilk Test Statistic 0.709				Shapiro Wilk Test Statistic 0.923																	
46	5% Shapiro Wilk Critical Value 0.924				5% Shapiro Wilk Critical Value 0.924																	
47	<b>Data not Normal at 5% Significance Level</b>						<b>Data not Lognormal at 5% Significance Level</b>															
48																						
49	<b>Assuming Normal Distribution</b>						<b>Assuming Lognormal Distribution</b>															
50	DL/2 Substitution Method				DL/2 Substitution Method																	
51	Mean 519.2				Mean 6.029																	
52	SD 468.9				SD 0.603																	
53	95% DL/2 (t) UCL 630.3				95% H-Stat (DL/2) UCL 590.3																	
54																						
55	Maximum Likelihood Estimate(MLE) Method N/A						Log ROS Method															
56	MLE yields a negative mean						Mean in Log Scale 6.056															
57							SD in Log Scale 0.573															
58							Mean in Original Scale 525.4															
59							SD in Original Scale 465.4															
60							95% t UCL 635.7															
61							95% Percentile Bootstrap UCL 635.7															
62							95% BCA Bootstrap UCL 665.7															
63							95% H-UCL 589.2															
64																						
65	<b>Gamma Distribution Test with Detected Values Only</b>						<b>Data Distribution Test with Detected Values Only</b>															
66	k star (bias corrected) 2.004						Data do not follow a Discernable Distribution (0.05)															
67	Theta Star 339.3																					
68	nu star 112.2																					
69																						
70	A-D Test Statistic 1.384						<b>Nonparametric Statistics</b>															
71	5% A-D Critical Value 0.757						Kaplan-Meier (KM) Method															
72	K-S Test Statistic 0.757																					
73	5% K-S Critical Value 0.167						Mean 528.3															
74							SD 163.9															





	A	B	C	D	E	F	G	H	I	J	K	L
220					Skewness	0.535						
221												
222	<b>Relevant UCL Statistics</b>											
223	<b>Normal Distribution Test</b>						<b>Lognormal Distribution Test</b>					
224				Shapiro Wilk Test Statistic	0.96			Shapiro Wilk Test Statistic	0.962			
225				Shapiro Wilk Critical Value	0.947			Shapiro Wilk Critical Value	0.947			
226	<b>Data appear Normal at 5% Significance Level</b>						<b>Data appear Lognormal at 5% Significance Level</b>					
227												
228	<b>Assuming Normal Distribution</b>						<b>Assuming Lognormal Distribution</b>					
229				95% Student's-t UCL	4319697			95% H-UCL	4594363			
230	<b>95% UCLs (Adjusted for Skewness)</b>						<b>95% Chebyshev (MVUE) UCL</b>					
231				95% Adjusted-CLT UCL (Chen-1995)	4332797			97.5% Chebyshev (MVUE) UCL	5964232			
232				95% Modified-t UCL (Johnson-1978)	4323060			99% Chebyshev (MVUE) UCL	7168686			
233												
234	<b>Gamma Distribution Test</b>						<b>Data Distribution</b>					
235				k star (bias corrected)	3.709		<b>Data appear Normal at 5% Significance Level</b>					
236				Theta Star	1043886							
237				MLE of Mean	3872225							
238				MLE of Standard Deviation	2010513							
239				nu star	370.9							
240				Approximate Chi Square Value (.05)	327.3		<b>Nonparametric Statistics</b>					
241				Adjusted Level of Significance	0.0452			95% CLT UCL	4311237			
242				Adjusted Chi Square Value	326.1			95% Jackknife UCL	4319697			
243							<b>95% Standard Bootstrap UCL</b>					
244				Anderson-Darling Test Statistic	0.302			95% Bootstrap-t UCL	4374707			
245				Anderson-Darling 5% Critical Value	0.754			95% Hall's Bootstrap UCL	4322969			
246				Kolmogorov-Smirnov Test Statistic	0.0887			95% Percentile Bootstrap UCL	4293146			
247				Kolmogorov-Smirnov 5% Critical Value	0.126			95% BCA Bootstrap UCL	4312983			
248	<b>Data appear Gamma Distributed at 5% Significance Level</b>						<b>95% Chebyshev(Mean, Sd) UCL</b>					
249								97.5% Chebyshev(Mean, Sd) UCL	5539017			
250	<b>Assuming Gamma Distribution</b>						<b>99% Chebyshev(Mean, Sd) UCL</b>					
251				95% Approximate Gamma UCL (Use when n >= 40)	4388468							
252				95% Adjusted Gamma UCL (Use when n < 40)	4404777							
253												
254	<b>Potential UCL to Use</b>						<b>Use 95% Student's-t UCL</b>					
255												
256	<b>Note:</b> Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UC											
257	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
258	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											
259												
260												
261	<b>Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)</b>											
262												
263	<b>General Statistics</b>											
264	Number of Valid Observations						Number of Distinct Observations					
265												
266	<b>Raw Statistics</b>						<b>Log-transformed Statistics</b>					
267				Minimum	77.5			Minimum of Log Data	4.35			
268				Maximum	1173			Maximum of Log Data	7.067			
269				Mean	566.3			Mean of log Data	6.13			
270				Geometric Mean	459.3			SD of log Data	0.729			
271				Median	551.7							
272				SD	311.4							
273				Std. Error of Mean	44.04							
274				Coefficient of Variation	0.55							
275				Skewness	0.099							
276												
277	<b>Relevant UCL Statistics</b>											
278	<b>Normal Distribution Test</b>						<b>Lognormal Distribution Test</b>					
279				Shapiro Wilk Test Statistic	0.942			Shapiro Wilk Test Statistic	0.897			
280				Shapiro Wilk Critical Value	0.947			Shapiro Wilk Critical Value	0.947			
281	<b>Data not Normal at 5% Significance Level</b>						<b>Data not Lognormal at 5% Significance Level</b>					
282												
283	<b>Assuming Normal Distribution</b>						<b>Assuming Lognormal Distribution</b>					
284				95% Student's-t UCL	640.1			95% H-UCL	742.7			
285				95% UCLs (Adjusted for Skewness)				95% Chebyshev (MVUE) UCL	889.7			
286				95% Adjusted-CLT UCL (Chen-1995)	639.4			97.5% Chebyshev (MVUE) UCL	1017			
287				95% Modified-t UCL (Johnson-1978)	640.2			99% Chebyshev (MVUE) UCL	1268			
288												
289	<b>Gamma Distribution Test</b>						<b>Data Distribution</b>					
290				k star (bias corrected)	2.404		<b>Data do not follow a Discernable Distribution (0.05)</b>					
291				Theta Star	235.5							
292				MLE of Mean	566.3							



366 Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UC  
367 These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)  
368 and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.  
369